Effective Use of Technology

(The ability to use a variety of technologies effectively.)

Indicators	1 ***Rarely Demonstrates***	2 ***Sometimes Demonstrates***	3 ***Usually Demonstrates***	4 ***Consistently Demonstrates***
Uses a variety of technologies in producing an idea or product *(e.g., word processing, spreadsheet, database, graphics, digitized cameras)*	• Uses a limited variety of productivity tools that demonstrate competency with ongoing assistance	• Uses a variety of productivity tools that demonstrate competency in displaying presentation and content with moderate assistance	• Usually uses a variety of productivity tools that demonstrate competency in displaying presentation and content	• Consistently uses a variety of productivity tools that displays excellence in presentation and content
Uses a variety of technologies to access and manage information and to generate new information *(e.g., on-line surveys and interviews as well as tools to record, organize, and communicate the data using databases and spreadsheets*	• Uses a limited number of different technologies to access and manage information with ongoing assistance • Generates new information that demonstrates effective use of information tools based on accessed information as well as quality of information sources with ongoing assistance	• Uses a limited number of different technologies to access and manage information with moderate assistance • Generates new information that demonstrates effective use of information tools based on accessed information as well as quality of information sources with moderate assistance	• Usually uses a variety of technologies to access and manage information • Usually generates new information that demonstrates effective use of information tools based on accessed information as well as quality of information sources	• Consistently and accurately uses a variety of technologies to access and manage information • Consistently generates new information that demonstrates effective use of information tools based on accessed information as well as quality of information sources
Uses appropriate technologies for communication, collaboration, research, creativity and problem solving	• Chooses appropriate technology tools to complete product with ongoing assistance	• Chooses appropriate technologies to complete product with moderate assistance	• Usually selects the most appropriate technologies to complete product and can explain its appropriateness	• Consistently chooses most appropriate technologies to complete assignments and can explain its appropriateness. • Uses multimedia, electronic devices, email, and/or Internet to expand beyond barriers of classroom

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NETS for Students: Achievement Rubric

DRAFT (March 22, 2005)

Purpose: This draft version of the NETS for Students: Achievement Rubric is available online for educational technology professionals to review and provide feedback to the developers.

More information: If you have questions about the rubric, please contact the developers at **netsrubric@learningpt.org**.

NETS for Students: Achievement Rubric Grades PK–12

NETS for Students	Proficient by end of Grade 2	Proficient by end of Grade 5	Proficient by end of Grade 8	Proficient by end of Grade 12
1. Basic operations and concepts **a. Students demonstrate a sound understanding of the nature and operation of technology systems. (nature and operations)**	1. Students **describe** how to use basic input devices (e.g., keyboard fingering and mouse or track-pad manipulation), output devices (e.g., monitor and printer use), and software resources (e.g., diskette, CD-ROM use).	1. Students **know how to use** basic input and output devices (including adaptive devices as needed); **access** network resources (e.g., printers, file-servers); and **use** common peripherals (e.g., scanners, digital probes, digital cameras, video projectors).	1. Students **recognize** hardware and software components used to provide access to network resources and **know** how common peripherals (e.g., scanners, digital cameras, video projectors) are accessed, controlled, connected, and used effectively and efficiently.	1. Students **describe** new and/or advanced technology resources information dissemination options (e.g., video servers, webcasting, compressed video delivery, online file-sharing, graphing calculators, multifunction communications devices, global positioning software) and technology career opportunities.
	2. Students **name** common technology found in homes (e.g., VCRs, tape or digital recorder, CD player, digital still and video cameras, telephones, radios).	2. Students **recognize, discuss,** and **visually represent** ways technology has changed life and work at school and in the home, community, business, industry, and government over the past three decades.	2. Students **know how to evaluate, select,** and **use** appropriate technology tools and information resources to design, plan, develop, and communicate content information appropriately, addressing the target audience and providing accurate citations for sources.	2. Students **identify** capabilities and limitations of contemporary and emerging technology resources and **assess** the potential of these systems and services to address personal, lifelong learning, and workplace needs.
	3. Students **identify** functions represented by symbols and icons commonly found in application programs (e.g., font, size, bold, underline, alignment, color of type).	3. Students **identify** and **know how to use** Menu options in application programs to develop text, graphic, spreadsheet, and Web documents; save, print, format, and add multimedia features; store, access, and manage files; and use dictionary, thesaurus, and spelling and grammar tools.	3. Students **know how to identify** appropriate file formats for a variety of applications and **apply** utility programs to convert formats, as necessary, for effective use in Web, video, audio, graphic, presentation, word processing, database, publication, and spreadsheet applications.	3. Students **collaborate** in teams to illustrate content-related concepts integrating a variety of media (e.g., print, audio, video, graphic, probes, simulations, models) with presentation, word processing, publishing, database, graphics design software, or spreadsheet applications.
	4. Students **know how to use** correct sitting, hand, arm, and fingering positions to type complete sentences (including shift for capital letters, space bar for spacing, and punctuation keys).	4. **Know** proper keyboarding position and technique to touch type using the correct hands for alphabetic, numeric, and special purpose keys (arrows, escape, backspace, delete, caps lock, and control); and **know how to use** these keys and the Edit Menu items to correct errors in a document.	4. Students **continue** touch typing techniques, increasing keyboarding facility and improving accuracy, speed, and general efficiency in computer operation.	4. Students routinely **apply** touch typing techniques with advanced facility, accuracy, speed, and efficiency as they complete their assignments.

NETS for Students: Achievement Rubric Grades PK–12

NETS for Students	Proficient by end of Grade 2	Proficient by end of Grade 5	Proficient by end of Grade 8	Proficient by end of Grade 12
	5. Students **discuss** how to properly care for and use software media (e.g., mini DV tapes, videotapes, audio tapes).	5. Students **identify** characteristics suggesting that the computer needs upgraded system or application software, virus detection software, or spam defense software to protect the information and functioning of the technology system.	5. Students **examine** changes in hardware and software systems over time and **identify** how changes affect businesses, industry, government, education, and individual users.	5. Students **collaborate** in teams to evaluate software, hardware, and networking systems to inform the development of a technology plan for a specific real-world business, educational entity, industry, organization, or other group.
b1. Students are proficient in the use of technology. (information management)	Students **recognize** functions of basic File Menu commands (new, open, close, save, save as, print) and folders to manage and maintain computer files on a hard drive or other storage medium (diskette, CD-ROM).	Students **identify** basic software commands used to manage and maintain computer files on a hard drive, diskette, or CD-ROM; manage and maintain their files on a network; and **know how to exchange** files with other students and the teacher via network file-sharing and e-mail attachments.	Students **identify** strategies and procedures for efficient and effective management and maintenance of computer files in a variety of different media and formats on a hard drive and network.	Students **know how to use** advanced utilities (e.g., compression, antivirus) with computer files in a variety of different media and formats.
b2. Students are proficient in the use of technology. (terminology and problem solving)	Students **recognize** accurate terminology to describe hardware, software, multimedia devices, storage media, and peripherals and to **identify** the basic functions of technology resources (hardware and software) commonly used in early elementary classrooms.	Students **identify** correct terminology used to describe basic hardware, software, and networking functions, and to **discuss** the functions, processes, and/or procedures applied in common use of these technology resources.	Students **know how to solve** basic hardware, software, and network problems that occur during everyday use; **protect** computers, networks, and information from viruses, vandalism, and unauthorized use; and **access** online help and user documentation to solve common hardware, software, and network problems.	Students **know how to identify, assess,** and **solve** advanced hardware, software, and network problems by using online help and other user documentation and support.
2. Social, ethical, and human issues **a. Students understand the ethical, cultural, and societal issues related to technology.**	Students **identify** common uses of information and communication technology in the community and in daily life.	Students **identify** issues related to how information and communication technology supports collaboration, personal productivity, lifelong learning, and assistance for students with disabilities.	Students **identify** legal and ethical issues related to use of information and communication technology, **recognize** consequences of its misuse, and **predict** possible long-range effects of ethical and unethical use of technology on culture and society.	Students **analyze** current trends in information and communication technology and **assess** the potential of emerging technologies for ethical and unethical uses in culture and society.

NETS for Students: Achievement Rubric Grades PK–12

NETS for Students	Proficient by end of Grade 2	Proficient by end of Grade 5	Proficient by end of Grade 8	Proficient by end of Grade 12
b. Students practice responsible use of technology systems, information, and software.	Students **recognize** that copyright affects how one can use technology systems, information, and software resources.	Students **discuss** basic issues related to responsible use of technology and information, **identify** scenarios describing acceptable and unacceptable computer use, and **describe** personal consequences of inappropriate use.	Students **discuss** issues related to acceptable and responsible use of information and communication technology (e.g., privacy, security, copyright, file-sharing, plagiarism), **analyze** the consequences and costs of unethical use of information and computer technology (e.g., hacking, spamming, consumer fraud, virus setting, intrusion), and **identify** methods for addressing these risks.	Students **analyze** the consequences and costs of unethical use of information and computer technology and **identify** how individuals can protect their technology systems from the unethical and unscrupulous user.
c. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.	Students **describe** acceptable and unacceptable computer etiquette and how to work cooperatively with peers, family members, and others when using technology in the classroom or at home.	Students **identify** software or technology-delivered access that is valuable to them, and **describe** how it improves their ability to communicate, be productive, or achieve personal goals.	Students **examine** issues related to computer etiquette and **discuss** means for encouraging more effective use of technology to support effective communication, collaboration, personal productivity, lifelong learning, and assistance for individuals with disabilities.	Students **analyze** current trends in information and communication technology and **discuss** how emerging technologies could affect collaboration, enhance personal productivity, meet the diverse needs of learners, and promote opportunities for lifelong learning among local and global communities.
3. Technology productivity tools **a. Students use technology tools to enhance learning, increase productivity, and promote creativity.**	Students **know how to use** word processing, drawing tools, presentation software, concept-mapping software, graphing software, and other productivity software to illustrate concepts and convey ideas.	Students **identify** and **apply** common productivity software features such as menus and toolbars to plan, create, and edit word processing documents, spreadsheets, and presentations.	Students **describe** and **apply** common software features (e.g., spelling and grammar checkers, dictionary, thesaurus, editing options) to maximize accuracy in development of word processing documents; sorting, formulas and chart generation in spreadsheets; and insertion of pictures, movies, sound, and charts in presentation software to enhance communication to an audience, promote productivity, and support creativity.	Students **understand** and **apply** advanced software features such as templates and styles to improve the appearance of word processing documents, spreadsheets, and presentations and to provide evidence of learning, productivity, and creativity.

NETS for Students: Achievement Rubric Grades PK–12

NETS for Students	Proficient by end of Grade 2	Proficient by end of Grade 5	Proficient by end of Grade 8	Proficient by end of Grade 12
b. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.	Students **know how to work** together to **collect** and **create** pictures, images, and charts for development of word processed reports and electronic presentations.	Students **know** procedures for importing and manipulating pictures, images, and charts in word processing documents and spreadsheets, presentations, and other creative works.	Students **describe** how to use online environments or other collaborative tools to facilitate design and development of materials, models, publications, and presentations; and to **apply** utilities for editing pictures, images, and charts.	Students **analyze** a plan and procedures for development of a multimedia product (e.g., model, presentation, publication, other creative work, webcast), and **identify** authoring tools, other hardware and software resources, research, and team personnel needed to plan, create, and edit.
4. Technology communications tools **a. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.**	Students, with assistance from teacher, parents, or student partners, **identify** procedures for safely and securely using telecommunications tools (e.g., e-mail, bulletin boards, newsgroups) to read, send, or post electronic messages for peers, experts, and other audiences.	Students **identify** telecommunications tools (e-mail, online discussions, Web environments) and online resources for collaborative projects with other students inside and outside the classroom who are studying similar curriculum-related content.	Students **know how to use** telecommunications tools such as e-mail, discussion groups, and online collaborative environments to exchange data collected and learn curricular concepts by communicating with peers, experts, and other audiences.	Students **plan** and **implement** collaborative projects (with peers, experts, or other audiences) using advanced telecommunications tools (e.g., groupware, interactive Web sites, simulations, joint data collection, videoconferencing) to support curriculum concepts or benefit the local, regional, or global community.
b. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.	Students **know how to use** a variety of developmentally appropriate media (e.g., presentation software, newsletter templates, and Web pages as resources for clip art, music, and information resources) to **communicate** ideas relevant to the curriculum to their classmates, families, and others.	Students **identify** a variety of media and formats to create and edit products (e.g., presentations, newsletters, Web pages, portable document format) that communicate syntheses of information and ideas from the curriculum to multiple audiences.	Students **know how to use** a variety of media and formats to design, develop, publish, and present products (e.g., presentations, newsletters, Web pages) that effectively communicate information and ideas about the curriculum to multiple audiences.	Students **know how to use** a variety of media and formats to design, develop, publish, and present products, (e.g., presentations, newsletters, Web sites) that incorporate information from the curriculum and communicate original ideas to multiple audiences.
5. Technology research tools **a. Students use technology to locate, evaluate, and collect information from a variety of sources.**	Students, with assistance from teacher, parents, or student partners, **identify** steps for using technology resources such as CD-ROMs (reference or educational software) and Web-based search engines to locate information on assigned topics in the curriculum.	Students **describe** steps for using common Web search engines and basic search functions of other technology resources to locate information, and guidelines for evaluating information from a variety of sources for its relevance to the curriculum.	Students **know how to conduct** an advanced search using Boolean logic and other sophisticated search functions; and **know how to evaluate** information from a variety of sources for accuracy, bias, appropriateness, and comprehensiveness.	Students **know how to locate, select,** and **use** advanced technology resources (e.g., expert systems, intelligent agents, real-world models and simulations) to enhance their learning of curriculum topics selected.

NETS for Students: Achievement Rubric Grades PK–12

NETS for Students	Proficient by end of Grade 2	Proficient by end of Grade 5	Proficient by end of Grade 8	Proficient by end of Grade 12
b. Students use technology tools to process data and report results.	Students, with assistance from the teacher, **know how to use** existing common databases (e.g., library catalogs, encyclopedias, online archives, electronic dictionaries) to locate, sort, and interpret information on assigned topics in the curriculum.	Students **describe** how to perform basic queries designed to process data and report results on assigned topics in the curriculum.	Students **know how to identify** and **implement** procedures for designing, creating, and populating a database; and in performing queries to process data and report results relevant to an assigned hypothesis or research question.	Students **formulate** a hypothesis or research question on a curriculum topic they choose; and design, create, and populate a database to process data and report results.
c. Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.	Students **identify** technology resources (e.g., simple conceptual mapping software, drawing software) to show steps in a sequence; to **demonstrate** likenesses and differences, and to **recognize, record,** and **organize** information related to assigned curricular topics.	Students **identify, record,** and **organize** information on assigned topics in the curriculum by selecting and using appropriate information and communication technology tools and resources (e.g., slide show, timeline software, database, conceptual mapping).	Students **know how to select** and **use** information and communication technology tools and resources to collect and analyze information and report results on an assigned hypothesis or research question.	Students **formulate** a hypothesis or research question and **select** and **use** appropriate information and communication technology tools and resources for collecting and analyzing information and reporting results to multiple audiences.
6. Technology problem-solving and decision-making tools **a. Students use technology resources for solving problems and making informed decisions.**	Students **know how to select** information and communication technology tools and resources that can be used to solve particular problems (e.g., concept-mapping software to generate and organize ideas for a report; illustrate or sequence a story; a drawing program to make a picture; presentation software to communicate and illustrate ideas; a graph program to organize and display data; a Web browser and search engine to locate needed information).	Students **know how to apply** their knowledge of problem-solving tools to select appropriate technology tools and resources to solve a specific problem or make a decision.	Students **identify** two or more types of information and communication technology tools or resources that can be used for informing and solving a specific problem and presenting results, or for identifying and presenting an informed rationale for a decision.	Students **describe** integration of two or more information and communication technology tools and resources to **collaborate** with peers, community members, experts, and others to solve a problem and present results, or to present an informed rationale for a decision.
b. Students employ technology in the development of strategies for solving problems in the real world.	Students **identify** ways technology has been used to address real-world problems.	Students **know how to select** and **use** information and communication technology tools and resources to collect, organize, and evaluate information relevant to a real-world problem.	Students **describe** the information and communication technology tools they might use to compare information from different sources, analyze findings, determine the need for additional information, and draw conclusions for addressing real-world problems.	Students **integrate** information and communication technology to analyze a real-world problem, design and implement procedures to monitor information, set timelines, and evaluate progress toward the solution of a real-world problem.

Technology Skills

	Always	Frequently	Seldom	Never
1. Can start up and shut down a computer.	____	____	____	____
2. Can open and close a program.	____	____	____	____
3. Can insert a disk.	____	____	____	____
4. Can cut, copy, and paste text within an application and between multiple open applications.	____	____	____	____
5. Can open a file from a disk or hard drive.	____	____	____	____
6. Can save a file to a disk or specific location on a hard drive.	____	____	____	____
7. Can install and uninstall software.	____	____	____	____
8. Can add sound to a presentation.	____	____	____	____
9. Can add a video clip to a presentation.	____	____	____	____
10. Can insert a hyperlink into another document.	____	____	____	____
11. Can use File Manager or Excel to organize files.	____	____	____	____
12. Can use advanced features of a word processor (tables, headers, footers, columns, etc.).	____	____	____	____
13. Can create a graph from spreadsheet data.	____	____	____	____
14. Can create, copy, move, rename, and delete folders.	____	____	____	____
15. Can format a word processed document (font style, line spacing, paragraph formatting, margins, tabs, etc.).	____	____	____	____
16. Can reduce, enlarge, or crop a graphic.	____	____	____	____
17. Can convert graphics from one file format to another.	____	____	____	____
18. Can use clip art.	____	____	____	____

Technology Skills

	Always	Frequently	Seldom	Never
19. Can use a variety of media and technology resources for directed and independent learning activities.	____	____	____	____
20. Can communicate about technology using developmentally appropriate and accurate terminology.	____	____	____	____
21. Can work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom.	____	____	____	____
22. Can demonstrate positive social and ethical behaviors when using technology.	____	____	____	____
23. Can practice responsible use of technology systems and software.	____	____	____	____
24. Can create developmentally appropriate multimedia products with support from teachers, family members, or student partners.	____	____	____	____
25. Can use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.	____	____	____	____
26. Can gather information and communicate with others using telecommunications with support from teachers, family members, or student partners.	____	____	____	____
27. Can discuss common uses of technology in daily life and the advantages and disadvantages those uses provide.	____	____	____	____
28. Can discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use.	____	____	____	____
29. Can use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum.	____	____	____	____

Technology Skills

	Always	Frequently	Seldom	Never
30. Can use technology tools (e.g., multimedia authoring, presentation, Web tools, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create products for audiences inside and outside the classroom.	____	____	____	____
31. Can use telecommunications and online resources (e.g., e-mail, online discussions, Web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom.	____	____	____	____
32. Can use telecommunications efficiently to access remote information, communicate with others in support of direct and independent learning, and pursue personal interests.	____	____	____	____
33. Can use technology resources (e.g., calculators, data-collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities.	____	____	____	____
34. Can determine which technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems.	____	____	____	____
35. Can demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society.	____	____	____	____
36. Can exhibit legal and ethical behaviors when using information and technology and discuss consequences of misuse.	____	____	____	____
37. Can use content-specific tools, software, and simulations (e.g., environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research.	____	____	____	____
38. Can design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curricular concepts to audiences inside and outside the classroom.	____	____	____	____

Technology Skills

	Always	Frequently	Seldom	Never
39. Can collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information and to develop solutions or products for audiences inside and outside the classroom.	____	____	____	____
40. Can research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems.	____	____	____	____
41. Can identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning and workplace needs.	____	____	____	____
42. Can analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole.	____	____	____	____
43. Can demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information.	____	____	____	____
44. Can use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence).	____	____	____	____
45. Can evaluate technology-based options, including distance and distributed education, for lifelong learning.	____	____	____	____